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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,731	BAUMAN, NATAN	
	Examiner	Art Unit	
	Walter F. Briney III	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,19,21-24,26-29,35-38,40 and 42-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,19,21-24,26-29,35-38,40 and 42-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/04/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claims 10-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.**

Claims 10-12 contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These claims each recite that the maximum lateral dimension of the receiver is less than twenty percent of the maximum lateral dimension of the user's ear canal. Besides the fact that this is indefinite since the basis of comparison, i.e. a maximum lateral dimension of a user's ear canal, is variable since everyone has a different maximum lateral canal dimension, making an assumption of 10mm as the average largest size, means the receiver must be 2mm or less at its maximum lateral point. Considering the applicant's specification neither suggests where to purchase such a receiver or how to make such a receiver, it is up to the skill of an ordinary practitioner and the knowledge in the prior art to make such a receiver.

Unfortunately, the prior art illustrates that the smallest audio receiver obtainable at the time of the invention was larger than 2mm. For example, Knowles Electronics, which is a leader in hearing aid receiver design, produces the world's smallest armature receiver as the FK series receiver, with a maximum dimension of 2.73mm. See Knowles product catalog description for FK receiver. The size of the FK series receiver was decreased by 0.005 inches in the manner shown in US Patent 5,960,093. This minor improvement shows that those of ordinary skill in the art struggle to even find tiny ways to shrink their receivers. In addition, US Patent 6,804,368 to Tsuda of Ferrotec Corporation discloses micro-speakers with a diameter of 7.9mm. See column 4, lines 15-29. Moreover, Tsuda discloses the inherent difficulty in manufacturing micro-speakers, such as low yields, which illustrates that decreasing size causes unpredictable results and is not necessarily within the ability of one of ordinary skill in the art. See column 2, lines 38-50. In this way, it is apparent that creating a receiver dimensioned as claimed would require either innovative processes or the development of novel speaker technologies.

Evidence that unreasonable experimentation would be required is that since 1999, the lateral dimensions of the FK series receiver have remained the same, suggesting that no ordinary "tweaks" are being discovered. Second, technologies such as MEMS, which might be capable of meeting the claimed dimensions, have not even been fully developed as of July 2006, which is years away from the filing date of this application. See the article entitled "Heading to the Beginning" taken from the online journal Hearing Products Report. Therefore, as the applicant provides no direction and

no working examples for the claimed invention and as the prior art does not provide the required solution, evidence that it would have been in ability of one of ordinary skill in the art, that shrinking is a predictable exercise, or a suggestion that only minor experimentation would have been needed the above noted claims are rejected for failing to comply with the enablement requirement.

2. **Claims 1-12, 19, 21-24, 26-29, 35, 40 and 42-55, 58-60, 62, 64 and 66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 1-12, 19, 21-24, 26-29, 35, 40 and 42-55, 58-60, 62, 64 and 66 all recite that the hearing aid claimed therein comprises a receiver generating about three decibels or below of insertion loss over a portion of the human ear audible frequencies. This limitation is indefinite since it is critical that stimulating sound input levels are reported, since the ear may non-linearly amplify/attenuate sounds.

Claims 8-12, 36-38, 56, 57, 61, 63, 65 and 67 all recite that a maximum lateral dimension of the receiver is less than a certain percent of the maximum lateral dimension of a user's ear canal. This limitation is a relative measure as it compares the lateral dimension of a first element to the lateral dimension of a second element. Because the dimension of the second element is variable and because the first element is quantitatively sized relative to the second element, it follows that the lateral dimension of the first element is indefinite. See MPEP 2173.05(b) and Ex parte Brummer, 12 USPQ2d 1653, where a claim was made to a bicycle (hearing aid) that recited "said front and rear wheels so spaced as to give a wheelbase (maximum lateral dimension of

a receiver) that is between 58 percent and 75 percent of the height (maximum lateral dimension of a user's ear canal) of the rider (user) that the bicycle was designed for." For purposes of this Office Action, a generous value of 10mm will be used as an average maximum lateral dimension of a user's ear canal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-7, 40, 42-53 and 59-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluvinage et al. (US Patent 5,987,146).**

Claim 1 is limited to "a hearing aid." Likewise Pluvinage teaches a hearing aid, in particular, an open ear canal hearing aid system with the speaker in the ear canal as disclosed in the Abstract. The embodiment of most importance herein is depicted in figure 7. Therein, the hearing aid is shown to comprise a "speaker" 44. The speaker is held in place by one of the ear tips shown in figures 3a, 3c, 4a and 4c. Figures 4a and 4c illustrate ear tips including flanges 21 for suspending the tube 30 within the ear canal as well as the speaker 44 mounted at the end of the tube. See column 5, lines 31-55. As seen in figure 7, sound received at microphone 42 is processed in accordance with hearing loss programming within processor 48 and passed via an electrical connection within tube 30 to speaker 44. As seen in figure 5a, tube 30 passes over the external ear

and through the ear canal opening. Since the signals output by the processor are electrical tube 30 must comprise an electrical connection to electroacoustic transducer 44. Moreover, processor 48 corresponds to an amplifier 48 and is clearly positioned within the behind the ear unit.

Concerning the claim that the receiver generates three decibels or below of insertion loss over a portion of the human ear audible frequencies, it was shown above that this limitation attempts to define the structure of a hearing aid receiver based on its function. Unfortunately, the function is incomplete in its description to the point that the structure of the receiver is indefinite. Because of things like non-linear varying unoccluded responses of ears and variability of the stimulus, the test result of 3 dB is next to meaningless in defining the structure of the claimed invention. For example, inputs of varying intensity comprising the same frequency content will potentially produce varying amounts of insertion loss. This indefiniteness notwithstanding, the Knowles receiver used by Pluvinage has the same size as the receiver disclosed by applicant and will inherently generate the same insertion loss.

Although Pluvinage discloses a device significantly similar to what is claimed, it cannot be shown that Pluvinage anticipates the claimed invention. Specifically, Pluvinage fails to place the microphone sampling position outside of the ear canal. However, this deficiency is overcome by an obvious modification.

Concerning the microphone sampling position, Pluvinage remarks that sampling behind the ear can degrade sound quality. See column 2, lines 51-56. Despite this evidence of teaching away, it is noted that merely eliminating an element and its

function is obvious if the function of the element is not desired. See Ex parte Wu, 10 USPQ 2031; In re Larson, 144 USPQ 347; and In re Kuhle, 188 USPQ 7. In this way, removing the tube 32 connecting microphone 42 to the ear canal and thus eliminating the function of sampling within the ear canal would have been obvious provided the sampling function was not desired. It is reasonable that because the Pluvinage patent provides protection for a hearing aid with said sampling position, eliminating said canal sampling position and reverting to the known external sampling position would have been desirable for avoiding direct copying and potential infringement of Pluvinage's patent. Not only this, but the tube 32 clearly presents an acoustic mass, which will modify any sound input thereto. So while it may allow sampling within an ear canal, taking advantage of the user's outer ear frequency response, it also creates acoustic noise. This analysis illustrates that Pluvinage's disclosure may solve some problems of the claimed invention, however, Pluvinage's solution creates more problems, defining an area of design choice/tradeoff that weakens any allegation that Pluvinage teaches away to a degree rendering the proposed modification nonobvious.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to remove the sound tube 32 of Pluvinage since mere elimination of an element and its function is obvious provided that the function is undesired, which it certainly is in this case. Although some problems are solved, the solution creates extra problems that are not necessarily less burdensome or troubling. Furthermore, eliminating the tube 32 allows a practitioner the ability to take advantage of open ear receiver hearing aids without licensing Pluvinage's invention.

Claims 2-6 and 42-53 are limited to "the hearing aid according to claim 1," as covered by Pluvinage. Each of these claims recites a particular insertion loss over a particular frequency range. It is respectfully submitted that based on the assumptions apropos the rejection of claim 1, the Knowles receiver used by Pluvinage will inherently generate the same insertion losses claimed. Therefore, Pluvinage makes obvious all limitations of the claims.

Claim 7 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. The claim recites that the receiver is in either the bony region, the cartilaginous region or both. These three positions are all the possible locations for a receiver in the ear canal, so Pluvinage must disclose this. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 40 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. As seen in figure 1, a stiffening member 14 is provided in addition to an intermediate connection portion 10 and an electrical conducting component that is not shown but is inherent based on the disclosure that a speaker is placed in the ear canal. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 59 is limited to "the hearing aid according to claim 40," as covered by Pluvinage. Pluvinage illustrates element 14 as a wire. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 60 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. As seen in figure 10, the hearing aid of Pluvinage is envisioned to include programmable circuitry, under control of control circuitry 80. The circuitry and program

memory is encased in the BTE unit 40. See column 6, lines 46-67. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 62 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. Column 7, lines 6-16, describes that the control circuit controls the compressors, rendering the compressors "reprogrammable." Therefore, Pluvinage makes obvious all limitations of the claim.

Claims 61 and 63 recite essentially the same limitations as claims 60 and 62, and are rejected for the same reasons.

4. **Claims 8, 26-29, 35-37 and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluvinage in view of the Knowles product catalog.**

Claim 8 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. Pluvinage discloses that his receiver is an EH series receiver by Knowles Electronics. This receiver is known to have a maximum lateral dimension of 3.55mm. See Knowles Product Catalog description of the EH series receiver. Assuming that an average human's ear canal has a maximum lateral opening of 10mm at the entrance to the canal, it is seen that the disclosed EH series receiver is "less than half a maximum lateral dimension of a user's ear canal." Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 26 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. Speaker 44 of Pluvinage is actually a Knowles electronic receiver. These receivers include an internal speaker as well as a metallic casing as claimed. As specified by Pluvinage an EH series receiver is used, which inherently includes first and

second end portions as seen in the Knowles online product catalog. The two terminals of the receiver are located on a first end different than the second end, and must communicate with the intermediate connection portion 30 connecting the speaker to the electrical output of sound processor 48. On the other end is a port clearly seen in the product catalog's EH series receiver image. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 27 is limited to "the hearing aid according to claim 26," as covered by Pluvinage. As seen in figure 4b of Pluvinage, an ear tip 12 is provided in communication with the speaker's 44 port. This tip includes a membrane 18b that protects the port from debris. See column 5, lines 31-55. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 28 is limited to "the hearing aid according to claim 27," as covered by Pluvinage. The solid construction of the EH series receiver seen in the product catalog clearly seals the casing to debris at the first end portion and along a length of the casing extending to the port. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 29 is limited to "the hearing aid according to claim 26," as covered by Pluvinage. As seen in figure 4b of Pluvinage, an ear tip 12 is provided in communication with the speaker's 44 port. This tip includes a membrane 18b that protects the port from debris, including cerumen. The tip is also removable. See column 5, lines 31-55. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 35 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. The Knowles EH series receiver includes at least two ports, so that at least

two electrical conducting components must be routed through intermediate connecting portion 30 to the speaker. See Knowles Product Catalog description of EH series receiver. Since electrical conductors cannot bridge each other, it is inherent that they must be isolated for proper operation. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 54 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. This claim seeks to limit the structure of the claimed hearing aid based on how it is employed. In this way, it is only necessary that the hearing aid be dimensioned such that the receiver could conceivably be positioned within the cartilaginous outer region of the ear canal of the user. This is clearly possible with the hearing aid of Pluvinage since the receiver is only 3.55mm in maximum lateral dimension versus, where the maximum lateral entrance to an ear canal is about 10mm. Therefore, Pluvinage makes obvious all limitations of the claim.

Claim 55 is limited to "the hearing aid according to claim 1," as covered by Pluvinage. As seen in figure 5b, the tube 10 is suspended within the ear canal and away from the walls, such that a receiver mounted within the tubing would also be so suspended. Figures 4a-4d provide optional tips for supporting a receiver in a canal. Therefore, Pluvinage makes obvious all limitations of the claim.

Claims 56 and 57 recite essentially the same limitations as claims 54 and 55, and are rejected for the same reasons.

Claims 36 and 37 recite essentially the same limitations as claim 8, and are rejected for the same reasons.

5. **Claims 9 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluvinage in view of the Knowles product catalog and Miller (US Patent 5,960,093).**

Claim 9 is limited to "the hearing aid according to claim 8," as covered by Pluvinage. The EH series receiver disclosed by Pluvinage has a maximum lateral dimension of 3.55mm, which is greater than thirty percent of an average human's maximum lateral ear canal dimension of 10mm. However, this deficiency is overcome by an obvious modification. In particular, Pluvinage does not require the use of the EH series receiver, but merely uses it in one embodiment. Since 1997, Knowles electronics has released a plurality of smaller receivers, such as the FK series receiver, a description of which is provided in Miller (US Patent 5,960,093). This receiver has a maximum lateral dimension of 2.73mm, which is "less than thirty percent of a maximum lateral dimension of a user's ear canal." As the receivers are functionally equivalent, are both manufactured by the same company, and are both designed for use in hearing aids, it is obvious to replace one with the other.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace a known receiver by Knowles with another functionally equivalent receiver used in the field of hearing aids and that is advantageously smaller so that it leaves the ear canal more open, which conforms to the design goals of Pluvinage.

Claim 38 recites essentially the same limitations as claim 9 and, and is rejected for the same reasons.

6. **Claims 64-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluvinage in view of Mansgold et al. (US Patent 4,425,481).**

Claims 64 and 66 are limited to "the hearing aid according to claim 1," as covered by Pluvinage. These claims refer to user selection of multiple hearing aid programs stored in the BTE. Pluvinage fails to disclose this feature, however, this deficiency is overcome by an obvious modification.

In particular, it is well established that providing multiple sound programs within a single hearing aid allows a user to choose between programs optimized for various listening situations. Such a concept is illustrated by Mansgold, who discloses a programmable signal processing device. See column 1, line 11, through column 2, line 22.

It would have been obvious to provide multiple programs in a memory within the BTE unit of Pluvinage for the purpose of allowing a user to select between optimal settings for a specific listening environment without having to change hearing aids.

Claims 65 and 67 recite essentially the same limitations as claims 64 and 66, and are rejected for the same reasons.

7. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feeley et al. (US Patent Application Publication 2004/0010181) in view of Fretz et al. (US Patent Application Publication 2003/0002700) and Pluvinage.**

Claim 1 is limited to "a hearing aid." Similarly, Feeley discloses a hearing aid as seen in figure 1. The hearing aid of Feeley includes a BTE unit 33 comprising a microphone 62 that samples outside of the canal, and a receiver 13 suspended within

an ear canal of a user by way of mold 11. As seen in figure 6A, input from microphone 62 is sent to processing circuitry 61, which outputs to connector 60 and then to receiver 13 by way of connectors 20 and 31. Circuitry 61 processes microphone signals according to hearing loss programming. See paragraphs [0056] through [0057]. Since BTE unit 33 sits behind the user's cartilage, the output of the amplifier circuitry 61 is passed electrically around a portion of the user's external ear using wires 22. See paragraphs [0069] and [0072]. As seen in figure 6A, the microphone 62 and amplifier 61 are in the BTE unit 33. While Feeley discloses many elements of the claimed invention, Feeley does not disclose that the receiver is suspended in an open ear configuration since a mold is used, and that the receiver generates about three decibels or below of insertion loss over a portion of the human ear audible frequencies. However, these deficiencies are overcome by an obvious modification.

In particular, the use of ear molds, as used by Feeley, in hearing aids has been recognized in the art as problematic. Namely, Fretz discloses in paragraphs [0007] and [0008] that blocking the canal creates occlusion and reduction in natural sounds and that venting is not sufficient. Moreover, Fretz states that using molds requires either expensive fitting procedures or the use of stock canal ear tips, which are at best uncomfortable. See paragraphs [0010] and [0011]. All these disadvantages of molds led Fretz to design an open ear canal design. See paragraphs [0002] and [0013] as well as figure 1, which illustrates a tube 12 coupled to a BTE unit 10 and a maintaining ear tip 14.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the mold 11 of Feeley with an open ear tip as taught by Fretz for the purpose of alleviating all the problems enumerated by Fretz, and which happen to coincide with many of the advantages purported to have been solved by applicant's invention. In fact, the only advantage not taught by Fretz is that of acoustic tube resonance, but since Feeley is the base reference being modified and does not include said resonance noise, this advantage is moot and a solid case of obviousness stands.

Regarding the claimed insertion loss, since Feeley fails to specify which receiver to use, except to say that any Knowles receiver is preferred. See paragraph [0038]. The Knowles receiver catalog provides both EH series receivers as used by Pluvinage (US Patent 5,987,146) as well as even smaller FK series receivers. Since Pluvinage used an EH series receiver and achieved insertion gain (which is assumed for the purposes of this Office Action to be what the applicant intended by the term insertion loss) in the range claimed, it is reasonable that merely picking the EH series receiver from the Knowles list would render this remaining claim limitation obvious in view of the prior art.

It would have been obvious to one of ordinary skill in the art to use the EH series receiver made by Knowles electronics in the hearing aid of Feeley since Feeley expressly suggests using any Knowles receiver.

8. **Claims 19, 21-24 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feeley in view of Fretz and Pluvinage and further in view of GN Magazine from January**

2005, the ReSoundAiR pamphlet from September 2003 and the GN ReSound article from April 2003.

Claim 19 is limited to "the hearing aid according to claim 1," as covered by Feeley in view of Fretz. The hearing aid of Feeley includes an intermediate connection portion 21 containing electrical connections 22. This portion ends at a mold that suspends a receiver 13 in an ear canal of a user. However, in accordance with the rejection of claim 1, the mold is replaced with an open ear tip 14 as seen in figure 1 of Fretz. However, neither Feeley nor Fretz discloses a retaining member as claimed. This deficiency is overcome by an obvious modification.

First, it is noted that figure 1 of Fretz supports the language of Fretz's claim 1. It is also noted that figure 1 and claim 1 are embodied in the commercially available GN ReSoundAiR hearing aid, which was released in May 2003. See GN Magazine 1-05, page 13, column 1, lines 7-8. As seen on page 12 of the ReSoundAiR pamphlet released 8 September 2003, the ReSoundAiR includes a sports lock extending from the intermediate connection portion, labeled as number 12 in figure 1 of Fretz. This sports lock is disclosed as contacting the concha of the user and providing increased retention of the ear tip within the ear canal. See GN ReSound article entitled "An Innovative Non-Occluding DSP Device" generated April 10 2003, figure 1 and page 2, column 2.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to couple a retaining sports lock to the intermediate connection member of Fretz as taught by the ReSoundAiR pamphlet and GN ReSound article for the purpose of increasing retention of the ear tip within the ear canal.

Claim 21 is limited to "the hearing aid according to claim 19," as covered by Feeley in view of Fretz and further in view of the GN Magazine, the ReSoundAiR pamphlet and the GN ReSound article. The similarity in structure between the sports lock disclosed in the pamphlet and article and the retaining member 54 seen in figure 4 of the application means that the sports lock will provide the same functionality as claimed. Therefore, the cited prior art makes obvious all limitations of the claim.

Claim 22 is limited to "the hearing aid according to claim 19," as covered by Feeley in view of Fretz and further in view of the GN Magazine, the ReSoundAiR pamphlet and the GN ReSound article. Again, the similarity in structure between the sports lock and the claimed retention member 54 as seen in filed figure 4 supports an inherency argument that the sports lock will perform the claimed function. Therefore, the cited prior art makes obvious all limitations of the claim.

Claim 23 is limited to "the hearing aid according to claim 19," as covered by Feeley in view of Fretz and further in view of the GN Magazine, the ReSoundAiR pamphlet and the GN ReSound article. As noted in the rejection of claim 19, the sports lock acts to retain/stabilize. Therefore, the cited prior art makes obvious all limitations of the claim.

Claim 24 is limited to "the hearing aid according to claim 19," as covered by Feeley in view of Fretz and further in view of the GN Magazine, the ReSoundAiR pamphlet and the GN ReSound article. As noted in the rejection of claim 19, the sports lock acts to retain/prevent movement. Therefore, the cited prior art makes obvious all limitations of the claim.

Claim 58 is limited to "the hearing aid according to claim 19," as covered by Feeley in view of Fretz and further in view of the GN Magazine, the ReSoundAiR pamphlet and the GN ReSound article. The ReSoundAiR pamphlet and GN ReSound article clearly illustrate the sports lock as a wire. Therefore, the cited prior art makes obvious all limitations of the claim.

9. **Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feeley in view of Fretz and Pluvinage and further in view of the Knowles product catalog and Miller.**

Claims 36-38 are limited to "a hearing aid." These claims are rejected in view of Feeley and Fretz for the same reasons apropos claim 1 as well as the following. It is noted that the claimed receiver's maximum lateral dimension is less than fifty/forty/thirty percent of the maximum lateral dimension of a user's ear canal. As noted in the rejection of claim 1, it would have been obvious to pick, for example, the Knowles FK series hearing aid receiver since Feeley expressly permits selection of any viable Knowles receiver. The FK series receiver's maximum lateral dimension is 2.8mm, which is less than thirty percent (3mm) of an average maximum lateral dimension of 10mm, and thus satisfies the claimed requirement. The available date of the FK series receiver is established in the Miller patent. Therefore, Feeley in view of Fretz and the Knowles product catalog makes obvious all limitations of the claims.

Response to Amendment

The declarations under 37 CFR 1.132 filed 15 March 2007 are insufficient to overcome the rejection of claims 1-9, 19, 21-24, 26-29, 35-38, 40 and 42-67 based

upon 35 USC 103(a) as set forth in the last Office Action. The declarations will be treated individually below. Only those paragraphs relevant to the issue of patentability will be discussed.

The Declaration of Robert G. Glaser, Ph.D.

In paragraph 9 Dr. Glaser asserts that several companies have seen fit to introduce hearing aids in the same design class as the claimed Vivatone hearing aid. Specifically, Dr. Glaser states: "manufacturers that have taken the principal element of the Vivatone hearing aid design...their offerings in this new class of hearing aids obviously stems from the Vivatone product." This is a recurring theme throughout the applicant's current response. In essence, they are asserting that other manufacturers have copied their design. This has been shown to be false in the last Office Action: these alleged copiers are likely to have copied the applied Pluvinage reference.

In paragraphs 10-11 Dr. Glaser states that despite the written description's definition of insertion effect as "insertion gain," it should read as "insertion loss." This was discussed in detail in the in-person interview of 27 February 2007 and agreed as the correct interpretation based solely on the expertise of Drs. Glaser and Berlin. Ergo, the 35 USC § 112, second paragraph, of the claims regarding the use of the term "insertion loss" is moot. However, it is not agreed that the measurement values are definite. It is well known that the ear canal's impedance is non-linear due to otoacoustic emissions from the cochlea. The test mechanism must be reported to soundly judge patentability.

In paragraph 12 Dr. Glaser indicates that the Knowles speaker would "practically include a plastic, or the like, housing material provided around the metallic speaker." Unfortunately, this argument is moot since the claim does not require any such housing material. Dr. Glaser continues by stating that the microphone sampling tube of Pluvinage together with the Knowles speaker would approach 50 percent of the average, maximum lateral dimensions of ear canals. This is a straw-man fallacy since the microphone tube is not being applied in the rejection of the claims, but rather the Pluvinage hearing aid with microphone tube removed.

In paragraph 13 Dr. Glaser opens with the contention that Pluvinage requires sampling sound within the ear canal. This statement is made here without basis. Later, Dr. Glaser agrees with the examiner's finding that the microphone tube will cause negative effects, such as "tubal resonances." Finally, Dr. Glaser disavows his technical and legal knowledge in knowing to remove a microphone tube to avoid patent infringement. He also apparently believes that one must be a legal expert to understand that a claim for a hearing aid with two tubes does not read on a hearing aid with one tube. Without belaboring this point, it is noted that Dr. Glaser only appears to be thinking within a clinical context of modification, which is not necessarily the context one of ordinary skill in the art of building a hearing aid would find himself in.

In paragraph 14 Dr. Glaser reads Feeley as a teaching to occlude the ear canal despite the use of an "open mold." See paragraph [0047]. He appears to conclude that Feeley then cannot ever be an open device like the hearing aid of Vivatone. This appears to be a non sequitur. Dr. Glaser also states that Fretz is "different simply

because it is solely a tube design." Perhaps from Dr. Glaser's clinical experience it makes little sense to borrow components from different classes of hearing aids, but one of ordinary skill in the art is not necessarily limited to the clinic.

In paragraph 15 Dr. Glaser indicates that the sport lock is a flexible plastic and not a "wire." The rejected claims, however, are being given their broadest reasonable interpretation, where wire is interpreted as "something wire like" with wire being "metal in the form of a usually very flexible thread or slender rod."

In paragraph 16 Dr. Glaser addresses the secondary considerations of commercial success and copying. Dr. Glaser opines that Vivatone created a new category when launching the claimed hearing aid. However, it is clear on the record that Pluvinage first invented an open receiver in the ear design. While there are agreed upon differences between Pluvinage and the applicant's hearing aid, the central design of the Vivatone hearing aid already existed in the Pluvinage reference. Dr. Glaser refers to a loss of market share, yet this is undocumented and all discussion is, therefore, moot. Again, talk is made of penetration into the marketplace, but this has not been documented save for the Office's submission along with the last Office Action. See Kirkwood. Dr. Glaser notes that advertising hearing aids is expensive, but offers no evidence. Dr. Glaser continues with a discussion of the Kirkwood reference, indicating that its market data is not germane to the Vivatone hearing aid since said hearing aid is not comparable. Again, this means no evidence concerning market success has been presented. The statement from Alan Dozier concerning advertising is also considered to not be relevant since competitors are now advertising. The only evidence comes in

the form of pamphlets from competitors. It simply does not follow that a lot of money is being spent because of the presence of flyers.

Dr. Glaser finally concludes by stating "the Vivatone system is an advancement in that it rejects BTE-tube designs as well as the hybridized tube design of Pluvinage." While the Vivatone system appears a step above the BTE-tube designs in some aspects—namely reducing the tube effect of a ReSound Air, for example—there is no evidence of it rejecting the hybridized tube design of Pluvinage.

The Declaration of Charles I. Berlin, Ph.D.

In paragraph 5 Dr. Berlin states, "Phonak, Siemens, Interton, Oticon and Hansaton seem to me to have subsequently copied Vivatone's essential configuration." The essential configuration appears to include "the small BTE with the microphone port, the thin speaker connecting wire, and the small speaker suspended in the open ear canal," which all happen to be features of Pluvinage. Still, it is unclear on the record how the alleged copiers could only be copying Vivatone and not Pluvinage.

In paragraph 6 Dr. Berlin states that Pluvinage requires a sound sampling tube "to control feedback and make its own probe mike measures." However, no evidence of this can be found in the reference. Moreover, Dr. Berlin states, "one possessing ordinary skill in the art would look at the benefits and drawbacks of Pluvinage's design...and either accept or reject the design." Essentially, one of ordinary skill in the art is totally precluded from even modifying a previous design. This is nonsense. Lastly, Dr. Berlin makes the same statement that Dr. Glaser did concerning one of

ordinary skill in the art not being a patent attorney. That is, however, not required to understand what is being said in the Pluvinage claims.

In paragraph 8 Dr. Berlin finally attempts to evidence the requirement of the microphone sampling tube in the design of Pluvinage. In paragraph 8b, Dr. Berlin takes note of section/column 8, lines 27-39; however, this section does not make any mention of controlling feedback with the microphone tube. In fact, the presence of the tube will likely exacerbate feedback due to its direct coupling with the ear canal from which sound is emanating. Column 7, lines 6-16, again make no reference to the microphone tube. Finally, Dr. Berlin states, "all of this speaks to the examiner's suggestion that the second microphone and/or tube could be removed with no real changes to the device;" this is a straw-man fallacy. The argument is not whether any real changes will be made, but whether an element and its function could obviously be removed. In paragraph 8d, Dr. Berlin states that the wide-dynamic range compressor of Pluvinage could not operate without the second microphone tube: "the adaptations required of the processor were IMPOSSIBLE without the use and presence of the second sound tube." In essence, Dr. Berlin argues here that all ReSound hearing aids in the early 90s without the second sound tube of Pluvinage did not work. This is totally absurd. Moreover, bodily incorporation is not the test for obviousness since one of ordinary skill in the art could have used a processor besides the ReSound processor.

In paragraph 9 Dr. Berlin argues just as Dr. Glaser does in paragraph 12 of his declaration. Ergo, this paragraph is unpersuasive for the same reasons.

In paragraph 10, Dr. Berlin states that Feeley requires a mold while Fretz describes a conventional BTE-tube design. From this, he concludes that the configurations would cause much more insertion loss than the Vivatone hearing aid. This is a very powerful charge to make, but again is without any evidence. Moreover, it appears that Dr. Berlin is considering each design separately and not as combined in the rejections.

In paragraph 11 Dr. Berlin argues that the Vivatone device claimed is not comparable to other devices in a market sense, that it was copied and lost market share, and spent little on advertising. These assertions were already treated supra regarding paragraph 16 of Dr. Glaser's declaration.

In paragraph 12 Dr. Berlin cites advertising from the early 90's during the Gulf War; however, no evidence of the amount of money spent on and the success of such advertising is provided.

In paragraph 13 Dr. Berlin states that Vivatone cannot be compared. Again, this means that no market data can be considered on the record, which renders any decision of market success a guessing game.

In paragraph 14 Dr. Berlin believes Alan Dozier's statement to be dated; however, it is apropos of the year 2005, which also happens to be the same year as Vivatone's greatest documented sales.

In paragraph 15 Dr. Berlin concludes by stating that Vivatone is unique since it "handles Occlusion Effects and Insertion Loss with the same speaker-in-the-ear non obtunding design." Once more, this is exactly what Pluvinage also teaches.

Response to Arguments

Applicant's arguments filed 15 March 2007 have been fully considered but they are not persuasive.

Those sections of applicant's arguments that wholly depend on the declarations of Drs. Glaser and Berlin are not treated specifically below since the declarations have been found unpersuasive.

On pages 5-7 the applicant cites several cases that he believes illustrate the viability of evidence of copying without further evidence as to the alleged copier's attempts to create the claimed device before copying. These citations notwithstanding, it is still true that copying is not the only explanation of the competitor's products. For example, each competitor could have copied or, at least, borrowed concepts from Pluvinage. Absent the evidence of extensive research by competitors, the evidence is unpersuasive.

On page 9, line 14, through page 10, line 2, the applicant alleges that insertion loss is definite as recited in the claims since it "does not vary according to SPL (this is because it is measured with the hearing instrument turned off)." Still, absent the compressive response of the hearing aid, non-linear feedback from the cochlea into the ear canal creates a non-linear impedance within the ear canal. Accordingly, the claims are still considered indefinite under 35 USC 112, second paragraph. In addition to this, it is noted that "generating about three decibels or below of insertion loss" is a functional

limitation, whether applicant agrees or not, and is inherently performed by the Knowles receiver disclosed by Pluvinage due to its size.

On pages 12 and 13 the applicant alleges that Fretz did not teach suspending a speaker in the ear canal, but to route a sound tube from a BTE into the ear canal. This is a distortion. Fretz did not teach obviating the problems of using ear molds by using a sound tube, the sound tube was already present in Fretz's design. Instead, Fretz eliminated the use of molds in favor of a suspending mechanism that left an open ear canal. This is the teaching used to modify Feeley.

On page 19 the applicant relies on the declarations of Drs. Glaser and Berlin; however, it is important to again point out that the laudatory statements of competitors are directed solely toward their designs, not the Vivatone device being patented.

On page 20, lines 11-21, the applicant restates the examiner's enablement rejection as "because he has not heard of a smaller receiver since then, that such receiver cannot be produced." This is a straw man argument. The examiner actually provided evidence that hearing aid receivers have not decreased since 1999, there is great difficulty in simply decreasing receiver size and that future technologies, such as MEMS, were not available. Furthermore, the use of a round cross section does not necessarily lead to a smaller receiver.

On page 20, lines 22-28, the applicant alleges that "simply because the maximum lateral dimensions of user's ear canals vary does not render the claim indefinite. On a per user basis, such measurement may be readily made...such dimensions (more practically) may be based on averages of users (there is a frailty

defined range of ear canal dimensions)." If such a small range exists, the applicant ought simply document it and limit his scope accordingly. If a statistical measure is used to define the size of the ear canal, however, the size and variety of the population must be disclosed to provide a definite claim. Absent all of these elements, the claims are still indefinite.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SINH TRAN
SUPERVISORY PATENT EXAMINER

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